

United States Patent [19]**Saxe**[11] **4,164,365**[45] **Aug. 14, 1979**

- [54] **LIGHT VALVE FOR CONTROLLING THE TRANSMISSION OF RADIATION COMPRISING A CELL AND A STABILIZED LIQUID SUSPENSION**

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Related U.S. Application Data

- [60] Division of Ser. No. 596,198, Jul. 15, 1975, abandoned, which is a continuation-in-part of Ser. No. 476,106, Jun. 3, 1974, abandoned, which is a continuation-in-part of Ser. No. 276,769, Jul. 31, 1972, abandoned.

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[52] U.S. Cl. **350/362; 260/29.1 SB; 260/31.2 R; 260/33.2 R; 260/33.6 R; 260/33.8 R; 260/34.2**

[58] Field of Search **350/150, 151, 362**

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[57]

ABSTRACT

Polymeric materials which are used to stabilize particles including colloidal size particles, particularly particles which polarize light or other radiation and include halogen in their composition. The materials are long chain molecular copolymers having available functional groups such as OH or acidic groups in their structure and are soluble in liquids in which the colloidal particles are suspendable. At least one monomer of those used to form the copolymer has a branched structure, which may include more than one branch. Some of the materials are copolymers of 3,5,5-trimethylhexyl acrylate/2-hydroxypropyl acrylate/fumaric acid; 5,5-diethyl hexyl acrylate/2-hydroxypropyl acrylate/fumaric acid; and bis-2-ethylhexyl fumarate/3,5,5-trimethyl hexyl acrylate/vinylidene chloride/mesaconic acid. The materials retard or prevent the suspended particles in light valve suspensions from grouping together when a voltage is placed across the suspension containing these particles. The materials also reduce the voltage and electrical power needed to achieve a given change in light transmission for a light valve. They also enable suspensions to be used at elevated temperatures without significant degradation.

25 Claims, No Drawings